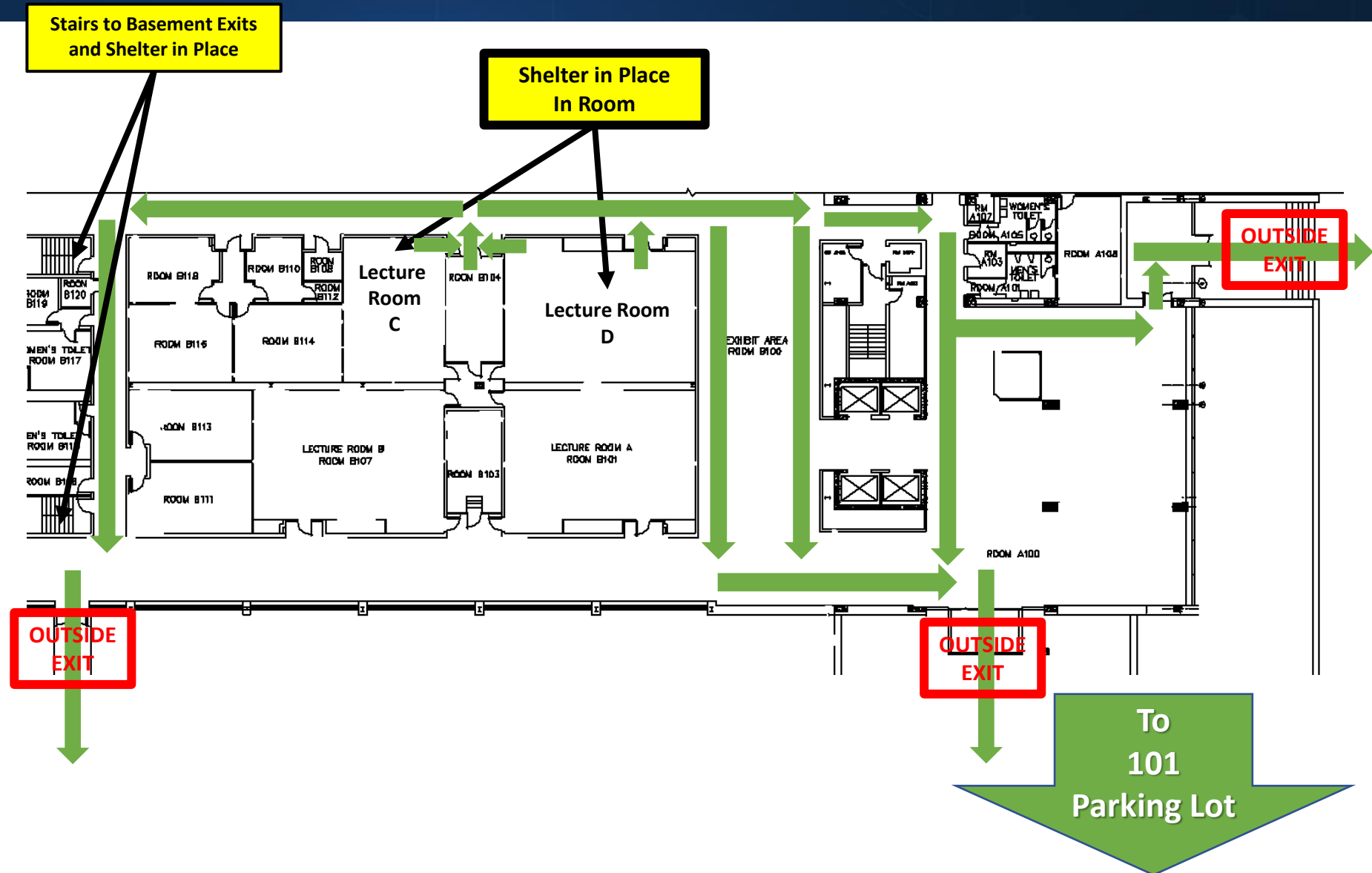


NCST Advisory Committee Meeting

June 14-15, 2022

Lecture Rooms C & D Emergency Plans



Committee Participation



Presenters: turn on “push-to-talk” microphone at podium/panel table to ensure you are heard by virtual attendees and on the meeting recording.

In-person attendees: use “push-to-talk” microphones at your seat to ensure you are heard by virtual attendees and on the meeting recording.

Virtual committee members/presenters:

- Please keep your cameras on if you are comfortable doing so, especially during discussion periods.
- Please unmute your microphone if you wish to speak.

Meeting Goals



- Review NIST's response to the NCSTAC's 2022 Report to Congress
- Review Disaster and Failure Studies Program Scoring of Events and Readiness of Teams
- Describe new disaster research initiatives
- Review progress on the implementation of NCST investigation recommendations for the World Trade Center and the Joplin tornado
- Review the status of the NCST investigation of Hurricane Maria's effects on Puerto Rico
- Review the status of the NCST investigation of the partial collapse of Champlain Towers South in Surfside, Florida
- Develop the Committee's annual report to Congress

Agenda



Time (ET)	Day 1 Topic
9:00 – 10:40 am	Opening Business <ul style="list-style-type: none">• Call to Order/Roll Call• Welcome/Opening Remarks• FACA Ethics Briefing• Meeting Goals/Review of Agenda/Introduction of New Committee Members• NIST Response to the NCSTAC's 2022 Report to Congress & Committee Discussion• Disaster and Failure Studies Program Update & Committee Discussion
10:40 – 10:55 am	BREAK
10:55 – 11:40 am	Hurricane Ian Study Overview & Committee Discussion

Time (ET)	Day 1 Topic
11:40 am – 12:25 pm	Summary of Progress on Prior Investigations & Committee Discussion <ul style="list-style-type: none">• World Trade Center Recommendations• Joplin Tornado Recommendations
12:25 – 1:15 pm	Committee Photo and LUNCH
1:15 – 3:00 pm	Hurricane Maria NCST and NWIRP Updates <ul style="list-style-type: none">• Summary of Hurricane Maria NCST Investigation Progress & Committee Discussion• Cross-Project Panel Theme 1:Hospitals & Discussion• Cross-Project Panel Theme 2: Sheltering & Discussion
3:00 – 3:15 pm	BREAK

Agenda



Time (ET)	Day 1 Topic
3:15 – 4:15 pm	Hurricane Maria NCST and NWIRP Updates Continued <ul style="list-style-type: none">• Cross-Project Panel Theme 3: Infrastructure Dependencies & Committee Discussions• Conclusion and Update on Hurricane Fiona & Committee Discussion
4:15 – 5:00 pm	NCSTAC Preparation of Annual Report to Congress
5:00 pm	ADJOURN (DAY 1)
	Private Committee Dinner at King Farm Restaurant, Sheraton Rockville

Time (ET)	Day 2 Topic
9:00 – 9:05 am	Opening Business: Call to Order/Roll Call
9:05 – 11:10 am	Champlain Towers South NCST Update <ul style="list-style-type: none">• Summary of the Champlain Towers South NCST Investigation Progress & Committee Discussion• Presentation of Champlain Towers South: Evidence Collection, Measurements, & Visualization & Committee Discussion• Presentation of Champlain Towers South: Structural, Geotechnical, & Materials Science Analysis/Testing & Committee Discussion
11:10 – 11:25 am	BREAK

Agenda

Time (ET)	Day 2 Topic
11:25 am – 12:45 pm	Champlain Towers South NCST Update Continued <ul style="list-style-type: none">• Presentation of Champlain Towers South: Failure Hypotheses & Committee Discussion• Conclusion of Champlain Towers South NCST Investigation Progress and Next Steps & Committee Discussion
12:45 – 1:30 pm	LUNCH BREAK
1:30 – 3:30 pm	Closing Business <ul style="list-style-type: none">• Public Comment Period• Summary Remarks• NCSTAC Preparation of Annual Report to Congress
3:30 pm	ADJOURN

NIST Response to the NCSTAC's 2022 Report to Congress

Tanya Brown-Giammanco, Ph.D.
Director, Disaster & Failure Studies Program
NIST

Background Material on NCST Investigations

The National Construction Safety Team (NCST) Act authorizes the Director of NIST to:

establish NCST Act Teams for deployment after events causing the **failure of a building or buildings that has resulted in substantial loss of life or that posed significant potential for substantial loss of life.** (15 U.S.C. §7301(a))

Under the NCST Act established Teams shall:

- A. establish the likely technical cause or causes of the building failure,
- B. evaluate the technical aspects of evacuation and emergency response procedures,
- C. recommend, as necessary, specific improvements to building standards, codes, and practices based on the findings made pursuant to (A) and (B), and
- D. recommend any research and other appropriate actions needed to improve the structural safety of buildings, and improve evacuation and emergency response procedures, based on the findings of the investigation. (15 U.S.C. §7301(b)(2))

Background Material on NCST Investigations

- Under the NCST Act (15 U.S.C. 7301 (b)(1)), the purpose of the investigations by Teams is to improve the safety and structural integrity of buildings in the United States.
- Under the NCST Act implementing regulations (15 CFR § 270.100(c)), the number of fatalities considered to be “substantial” will depend on:
 - the nature of the event,
 - the event’s impact,
 - the event’s unusual or unforeseen character,
 - historical norms, and
 - other pertinent factors.
- Under the NCST Act implementing regulations (15 CFR § 270.100(b)), building failure may involve one or more of the following:
 - structural system,
 - fire protection (active or passive) system,
 - air-handling system, and
 - building control system.

Background Material on NCST Advisory Committee



- In accordance with 15 U.S.C. § 7310 (a) and restated in the NCST Advisory Committee Charter, the NCST Advisory Committee (Committee) shall:
 - advise the NIST Director on carrying out the NCST Act, and
 - review the procedures developed under Section 2 (c)(1) of the Act, and
 - review the reports issued as a result of an NCST investigation.
- In accordance with 15 U.S.C. § 7310 (b), on January 1 of each year the Advisory Committee shall transmit to the Committee on Science, Space and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report that includes:
 - an evaluation of Team activities, along with recommendations to improve the operation and effectiveness of Teams, and
 - an assessment of the implementation of the recommendations of Teams and of the advisory committee.

Background Material on NCST Advisory Committee



- Based on the NCST Advisory Committee Charter (2020), the NCST Advisory Committee shall:
 - meet at least once per year,
 - hold additional meetings, whenever called by the NIST Director or the DFO, and
 - meet in person or in the form of telephone conference calls and/or videoconferences.
- Based on the NCST Advisory Committee Charter (2020), NIST may establish subcommittees from among the NCST AC members, as may be necessary:
 - subject to the provisions of FACA (Federal Advisory Committee Act), and its implementing regulations, and applicable Department of Commerce guidance, and
 - who must report back to the parent committee, and must not provide advice and work products directly to the agency.

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>1. Interagency Agreement (IAA) with NSF “We recommend that NIST takes advantage of the agreement with NHERI by exploring more specifically how these programs can cooperate.”</p>	<p>We agree.</p> <p>The IAA with NSF was specifically created to allow for the use of NSF infrastructure such as NHERI and RAPID Centers and the various EER initiatives that can support disaster and failure studies. Two work orders have been issued under this IAA to support the Champlain Towers South investigation: 1) the use of the University of Texas-Austin NHERI facilities (mobile shaker) and associated personnel, and 2) the expansion of a RAPID project awarded to the Florida State University Center for Disaster Risk Policy to collect perishable data following the collapse. A third has been issued to support the Hurricane Ian NWIRP study to have the Oregon State University NHERI facility organize a data synthesis workshop.</p>

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>2. Design Guidelines for Tornado Effects</p> <p>“We encourage additional efforts to broaden recommendations for design guidelines for tornado effects to include classes of buildings and other structures in addition to high-impact buildings, to include the building code Risk Category II, which includes most common buildings.”</p>	<p>We agree.</p> <p>NIST collaborated with FEMA to develop and publish a 21-page FEMA/NIST fact sheet in early 2023, titled "Improving Windstorm and Tornado Resilience: Recommendations for One- and Two-Family Residential Structures". NIST has also begun a longer-term R&D effort to identify tornado resistant design options, evaluate associated benefit/cost ratios, develop design guidance and code change proposals for Risk Category II buildings.</p>

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>3. Standard Protocols for Verbal Autopsies</p> <p>“NCST investigations and mortality studies in general will greatly benefit if a standard protocol for conducting verbal autopsies is developed.”</p>	<p>We agree.</p> <p>We recognize that deaths caused by disaster events are often underestimated due to a lack of standards and inconsistencies in the attribution of disaster-related deaths. We expect that the results of this investigation, including the verbal autopsy instrument developed and implemented, will contribute significantly to the development of standard protocols for conducting verbal autopsies.</p>

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>4. Hurricane Maria Program Conclusions</p> <p>“Conclusions of the Hurricane Maria study should emphasize that loss of function, a key measure of resilience, is not only dependent on structural damage, but also depends on other building systems and surrounding infrastructure.”</p>	<p>We agree.</p> <p>In our investigation of critical building performance, we are considering how the function of selected hospitals and shelter facilities was impacted, not only by structural damage, but also by damage to building envelopes (e.g., roofing, doors, and windows), to mechanical and electrical systems, and to building contents, as well as by the loss of supporting infrastructure systems. We expect that the findings of the study will reflect the important role of nonstructural systems and supporting infrastructure, including backup systems, in maintaining building function following extreme events.</p>

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>5. Spanish Translations in the Hurricane Maria Program</p> <p>“It may be useful to consult Spanish language speakers who can comment about” nuances that may be lost by translating interviews and surveys conducted in Spanish into English to facilitate coding and analyses “for the Hurricane Maria study.”</p>	<p>We agree.</p> <p>High-quality translation by certified translators, along with independent review, has been a high priority in the development of Spanish-language data collection instruments and in translation of Spanish-language responses into English, in an effort to ensure the best quality translation. The original Spanish-language responses have also been provided along with the translations, to allow for further review where needed. Spanish language speakers, including NIST staff and contractors, were engaged in data collection, were consulted in the instrument development and translation, and will contribute to the development and review of final reports, including findings and recommendations.</p>

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p data-bbox="137 325 1131 425">6. Challenging Elements in the Champlain Towers South Investigation</p> <p data-bbox="137 439 1225 596">“The advisory committee recommends careful attention to the following highly challenging elements of the investigation:”</p> <ul data-bbox="137 668 1225 1110" style="list-style-type: none"><li data-bbox="137 668 1225 825">a. “potentially valuable information that can only be gained through interviews that may not be tied to physical evidence”<li data-bbox="137 896 1225 1110">b. “find a set of calculations for a similar building in South Florida designed in in the late 1970s or early 1980s; such a set would be helpful in establishing probable design practices and the standard of care.”	<ul data-bbox="1289 325 2405 1110" style="list-style-type: none"><li data-bbox="1289 325 2405 725">a. We agree. Interviews of eyewitnesses and others familiar with the building provides critical (non-quantitative) evidence in pursuit of our failure hypotheses. These interviews are a critical complement to quantitative evidence (e.g., physical specimens from the collapsed building, materials and structural tests) collected by the Team.<li data-bbox="1289 782 2405 1110">b. We agree. The investigation's History Project is reviewing information on the standards of care for design and construction. The suggestion to obtain design calculations for a similar building in time and location of CTS is an excellent one that we intend to pursue.

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>6. Challenging Elements in the Champlain Towers South Investigation (continued)</p> <p>c) “recognize the uncertainty of pre-collapse conditions and conduct tests on specimens that represent a reasonable range of probable conditions.”</p> <p>d) “computational models and laboratory test results should be adjusted to reflect the effects of long-term sustained load, which cannot be fully simulated in the laboratory tests.”</p>	<p>c. We agree and are accounting for uncertainty in all pre-collapse conditions.</p> <p>d. We agree. This is an important issue. Where appropriate, and as feasible, our models and laboratory tests account for creep and static fatigue.</p>

NIST Response to the 2022 NCST AC Report to Congress



Recommendation	Response
<p>7. Champlain Towers South Investigation Timeline</p> <p>“In light of the significance of the collapse and its potential impact on the US construction industry, we urge NCST to expedite their investigation and issue interim summaries of critical lessons learned as the investigation progresses.”</p>	<p>We agree with the importance of the investigation, the need to finish quickly while also maintaining the technical integrity of the investigation, and the need to communicate frequently with the public.</p> <p>The investigation team has developed a communications plan, which includes public updates delivered via these NCST AC public meetings, news updates, and meetings with family members. However, the NCST Act excepts disclosure of information “until the report required by section 7307 of this title [NCST Act] is issued.” We can and do provide public summaries of our plans and activities but cannot release information on findings or lessons learned until the final report is released.</p>